CLAIMS

1. A peptide or protein fragment of SEQ ID NO.1, said fragment comprising a neutralizing domain.

2. The peptide or protein of claim 1 which comprises the sequence of amino acid selected from the group SEQ ID NO. 4, SEQ ID NO. 5, SEQ ID NO. 6, SEQ ID NO. 7, SEQ ID NO. 8, SEQ ID NO. 9 or SEQ ID NO. 10.

3. The peptide or protein of claim 1 having the HR2 heptad region of the coronavirus S protein.

4. The peptide or protein of claim 1 selected from the group consisting essentially of SEQ ID NO. 4, SEQ ID NO. 5, SEQ ID NO. 6, SEQ ID NO. 7, SEQ ID NO. 8, SEQ ID NO. 9 or SEQ ID NO. 10.

5. The peptide or protein of claim 1 wherein the fragment comprises SEQ ID NO.4.

6. The peptide or protein of claim 1 wherein the fragment comprises SEQ ID NO.5.

7. A method of producing a fragment of the S protein of coronavirus comprising the steps of:

a) transforming a cell with a nucleic acid encoding a fragment of the S protein of coronavirus the fragment comprising a neutralizing domain, said nucleic acid in operative association with regulatory sequences capable of directing the expression thereof in the cell;

b) expressing the protein fragment in the cell; and

c) isolating the protein fragment.

8. An antibody to a peptide or protein fragment of SEQ ID NO.1, said fragment comprising SEQ ID NO. 5.

9. The antibody of claim 8 wherein the fragment comprises SEQID NO. 4.

10. The antibody of claim 8 wherein the peptide or protein comprises the HR2 heptad region of the coronavirus S protein.

11. The antibody of claim 8 wherein the peptide or protein is selected from the group consisting of SEQ ID NO. 4, SEQ ID NO. 5, SEQ ID NO. 6, SEQ ID NO. 7, SEQ ID NO. 8, SEQ ID NO. 9 or SEQ ID NO. 10.

12. A method of detecting a SARS coronaviral infection in a patient comprising the step of applying the antibody of claim 8 to at least part of the cells collected from the patient.

13. A kit for the detection of SARS coronavirus containing the antibody of claim 8.

14. A method to treat a patient with severe acquired respiratory syndrome or prevent the onset thereof comprising administering to the patient the peptide or protein of claim 1.

15. A method to treat a patient with severe acquired respiratory syndrome or prevent the onset thereof comprising administering to the patient the antibody of claim 8.

16. A vaccine to treat a patient with severe acquired respiratory syndrome or prevent the onset thereof comprising an effective amount of the peptide or protein of claim 1.

17. A vaccine to treat a patient with severe acquired respiratory syndrome or prevent the onset thereof comprising an effective amount of the antibody of claim 8.

18. An antibody to an S protein fragment selected from the group consisting of S 1, S 2, S 3, and S 9.

19. A method of detecting a SARS coronaviral infection in a patient comprising the step of applying the antibody of claim 18 to at least part of the cells collected from the patient.

20. A kit for the detection of SARS coronavirus containing the antibody of claim 18.

21. A mature, glycosylated spike protein of a coronavirus.

22. The mature glycosylated spike protein of claim 21 wherein the mature glycosylated spike protein contains a transmembrane domain (TMD).

23. The mature glycosylated spike protein of claim 21 wherein the mature glycosylated spike protein is a 210KDa protein.

24. The mature glycosylated spike protein of claim 21 wherein the coronavirus is a SARS coronavirus.

25. The mature glycosylated spike protein of claim 21 wherein the coronavirus is a SARS coronavirus strain, 2774.

26. A method of producing a mature, glycosylated spike protein of a coronavirus comprising the steps of

a) transforming a cell with a nucleic acid encoding a spike protein of a coronavirus or part there of;

b) expressing the spike protein in the cell; and

c) isolating the mature, glycosylated spike protein of the coronavirus.

27. The method of claim 26 wherein the mature glycosylated spike protein contains a transmembrane domain (TMD).

28. The method of claim 26 wherein the mature glycosylated spike protein is a 210KDa protein.

29. The method of claim 26 wherein the coronavirus is a SARS coronavirus.

30. The method of claim 26 wherein the coronavirus is a SARS coronavirus strain, 2774.

31. The method of claim 26 wherein the cell is selected from the group consisting of human lung cell and cos-7 cell.

32. A method of screening for a mature, glycosylated spike protein of a coronavirus comprising the steps of

a) isolating a spike protein;

b) immunoprecipitating the isolated spike proteins with Endo-H; and

c) detecting the remaining spike proteins that are the mature glycosylated spike protein.

33. The method of claim 32 wherein the mature glycosylated spike protein contains a transmembrane domain (TMD).

34. The method of claim 32 wherein the mature glycosylated spike protein is a 210KDa protein.

35. The method of claim 32 wherein the coronavirus is a SARS coronavirus.

36. The method of claim 32 wherein the coronavirus is a SARS coronavirus strain, 2774.

37. An antibody to a mature, glycosylated spike protein of a coronavirus or part their of.

38. The antibody of claim 37 wherein the mature glycosylated spike protein contains an anti-transmembrane domain (TMD).

39. The antibody of claim 37 wherein the mature glycosylated spike protein is a 210KDa protein.

40. The antibody of claim 37 wherein the coronavirus is a SARS coronavirus.

41. The antibody of claim 37 wherein the coronavirus is a SARS coronavirus strain, 2774.

42. A method of detecting a SARS coronaviral infection in a patient comprising the step of applying the antibody of claim 37 to at least part of the cells collected from the patient.

43. A kit for the detection of SARS coronavirus containing the antibody of claim 37.

44. A method to treat a patient with severe acquired respiratory syndrome or slow the progression of severe acquired respiratory syndrome comprising administering to a patient in need thereof the antibody of claim 37.

45. A vaccine to treat a patient with severe acquired respiratory syndrome or prevent the onset of severe acquired respiratory syndrome comprising the mature glycosylated spike protein of claim 21.

46. A vaccine to treat a patient with severe acquired respiratory syndrome or prevent the onset of severe acquired respiratory syndrome comprising the antibody of claim 37.

47. A vaccine to treat a patient with severe acquired respiratory syndrome or prevent the onset of

severe acquired respiratory syndrome comprising the mature glycosylated spike protein of claim 22.

48. A vaccine to treat a patient with severe acquired respiratory syndrome or prevent the onset of severe acquired respiratory syndrome comprising the antibody of claim 38.